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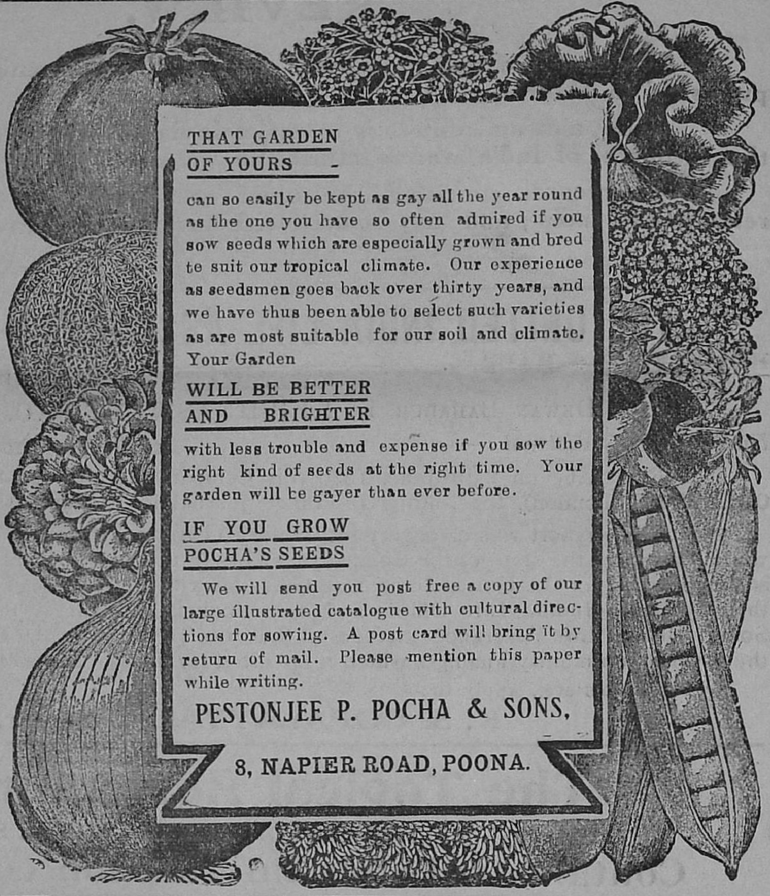

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THE FUTURE OF TROPICAL AGRICULTURE.

(MR. ANNESLEY DE SILVA.)

All tropical agricultural industries have been severely affected by the war, hence the great economic changes which are to-day world-wide in their effects have caused everyone interested and connected with tropical industries to look to the future. The prosperity of some industries will afford a means of safe-guarding the others, hence those interested in the industries which have suffered should make it their business to ascertain the nature of the depression, and devise ways and means of getting the maximum benefit with a minimum cost. The economic conditions which prevail to-day all over the world are abnormal. The existing state of affairs has necessitated an increased production of all the necessities of life, especially of foodstufls; the prohibitive prices which are still ruling should give an impetus to all persons to cultivate even the smallest plot of land, because the agriculturist to-day is the foundation upon which the rest of the country depends.

To more immediate problem which faces the people of the tropics, especially of India and Ceylon is the extension of rice cultivation. Forming as it does the staple food of practically all those who are in the Tropics, the question of increasing its yield has become an urgent one. The present high cost of rice has given to everyone a desire to interest himself in paddy cultivation and with this stimulating interest there have arisen many questions as to how the output may be increased. The success of any crop depends to a great extent on the use of manures and to this rule paddy is no exception. It has been satisfactorily proved that green manuring yields increased crops. These manures generally consist of the leaves and branches cut from trees and shrubs growing in proximity to the paddy field. Small applications of bone meal and dust are also made to lands which have already received applications of green manure. There are also several other improvements which may be effected so that areas under cultivation may give a better yield. In fact the rise in the price of food grains has been an inducement to many to go in for expensive manures. The best result seems to have been obtained with superphosphates. That paddy when transplanted yields a better crop is an axiom. But besides this advantage there is also a considerable saving of seed paddy. The measure of success however, depends on certain factors such as the age of the plant, the selection of seed, a dependable supply of water and a careful preparation of the soil. It is most essential that plants be young when transplanted, else the plants do not tiller or branch well. Six months paddy for instance should be transplanted before the plants are six weeks old. As regards the distance of transplanting there is no hard and fast rule. Judging by the results of various experiments the best method is to plant three plants per hole at distances varying from six to nine inches. The average cost of transplanting has been estimated at eight Rupees per acre. The selection of seed is another important point which should receive the most careful attention from all paddy cultivators. Some are of opinion that picking the largest head for seed will improve and increase the yield. But this is a mistaken notion, for if one observes a yield closely he will find that very large heads are borne by plants which produce very few bearing stalks. Hence the seed should be selected from plants bearing many stalks with medium size heads. Diseased plants should always be avoided and those selected should always be kept in the field for some time so that the seed may thoroughly ripen, whilst the plants should be cut off as closely as possible to the roots and kept with heads hanging down. The proper regulation of irrigation water is also a point of of importance, because too much water is harmful as too little, whilst the draining of fields should receive careful attention in order that the egress and ingress of water may be controlled. If a good yield is to be reckoned on, weeds should not be allowed to grow up with the crop, and in the case of rank growth of weeds hand-weeding should be resorted to about two months after sowing. At the present time when every possible increase in the crop of paddy is essential especially for India and Ceylon, the best method which remains is the application of manure and considering the high price of paddy such applications are bound to prove profitable and the world shortage of food demands that it should be done.

The industries of the tropics are passing through a critical period to-day. Such a state of affairs should be an inducement and an encouragement to the people to establish and extend other industries. It is a very unwise policy for any country to depend upon a small number of crops. If any country is is to be self-supporting, she should grow as many food crops as possible. The is a question of the moment all over the world. There are large acreages in the Tropics cultivated with tea, rubber and cocoanut, but the part devoted to food products is conspicuous by its absence. Considering the crisis through which we are going thorough the cultivation of food stuffs is an imperative need. Neither landowners nor agricultural farmers should fail to rise in the emergency. They should all realise the grave responsibility which rests on them and the greatness of the trust reposed in them, and do all and more than all their country demands of them. The present high prices of rice for instance should develop possibilities of extending the cultivation of maize—a highly nutritious, readily digestible and perfectly wholesome food. Analyses show that its digestible nutrients are second only to wheat and that the percentage of its fat-contents is very high when compared with other grains. There is no reason why such a valuable food should not take its place in the dietary of the people.

Another food crop which may be recommended to be grown extensively in order to meet the shortage of food is the sweet potato. A pretty hard crop, it is quickly grown and yields large crops and merits a more extensive use as a table vegetable than is at preseut made of. In its chemical composition it contains more dry matter and less water than ordinary potatoes, and is also richer in carbohydrates, being more valuable too as a heat, fat and energy producing body. The best soil for the crop is a loose loam, and the deeper the land is worked the larger the output. Free applications of cattle manure are highly beneficial, whilst the best time for planting is during the rains. The sweet potato is propagated by cuttings which should be at least ten inches long and buried deep in the soil at distances of ten to twelve inches. Tubers of medium size too flourish. The cuttings strike root in a week and vigorous growth follows after which very little attention is required. The crop is ready for harvesting when the leaves begin to turn yellow.

The production of more sugar is another matter of prime importance. From time immemorial, India was the native home of sugar-cane and if we consider the fertility of the soil and excellence of the climate there seems to be no reason why the cultivation of sugar-cane should not be the dominant culture in India, thus bringing her into line with other sugar-producing countries of the world. The most important points which we have to consider in the selection of land for surgar-cane are fertility and facilities for irrigation and draining away of water. Frequent applications of green and lime manure are highly recommended. As regards the distance of planting, higher yields are said to have been obtained when the canes were planted in rows three feet apart. The cultivation of sugar-cane can be undertaken in any district receiving an adequate rain-fall without irrigation or in dry zones under irrigation.

The cultivation of onions too should have a bright future. The climate of the tropics is perfectly adopted to it, and given a suitable soil and the necessary attention heavy crops are a certain result A rich sandy loam is about the best soil for onions. Before sowing the seeds, the seed-bed area is usually turned up and exposed to the weather, virgin soil being thoroughly manured with dung and bone dust. Onions are usually sown broadcast, but the best method is to drill them in. In this case the seeds are dropped at a distance of two inches apart in the drill, the drills themselves being about twelve to fifteen inches distant from each other. Some time afterwards the plants are thinned out with the hoe. To ensure good results the soil must be clear of all weeds and the roots only should be inside the soil.

The future of tropical agriculture is a brilliant one, but we cannot accomplish anythihg by a wave of the wand. A constant, consistent, and progressive agricultural policy is essential. The experience of the Great War has shown us that agriculture does not interest only individuals but involves also the safety of the State, in fact the safety and the security of the State demand that the agricultural land of the couutry should be made to yield its maximum production in food-stuffs. The war has brought back agriculture to its rightful place in the national economy. In all tropical countries investigations should be carried out to ascertain further possibilities of cultivating crops which do not form part of the present normal agricultural output. Agriculture is now more than an industry and a business; it is a life.

POTTERY IN THE PUNJAB—II.

(BY MR. PRAN NATH, M. SC.)

The glazed decorative tile work was introduced into this province by the Pathans about the 11th or 12th century. The tombs of the Pathan Kings, as well as the domes of mosques built by them are all covered with a primitive blue glaze. Even at Lahore, we have the Nila Gumbaz so called after the color of tiles covering the dome. We have many other similar ornamented monuments.

We can trace the development of glazed tile work through two or three centuries till we come to the reign of Shah Jahan when a large number of tombs and mosques were built, their walls and domes all decorated with tile mosaic known as CHINIKARI.

The beauty of this kind of tile work has never been overestimated. It still remains a standing monument to the skill of those who worked out these designs in glazed clay. Even eminent authorities on Indian art go into ecstacies when they describe it. Says Dr. Birdwood, "But the sight of wonder is when travelling over the plains of India, suddenly to come upon an eucostic tiled mosque. It is coloured all over with yellow, green, blue and other hues, and as a distant view of it is caught at sunrise, its stately domes and glittering minarets seem made of purest gold enamelled in azure and green, a fairy-like apparition of inexpressible grace and the most enchanting splendour."

The origin of the glazed tile work of Multanis is traced to Kashan, a city, in Persia where it flourished at a contemporary period. A local tradition at Multan as well as at Lahore ascribes the origin of this work to China and hence the name CHINIKARI. There are reasons, however, for supposing that the art originally came from Persia.

Kinds of Pottery.

(*a*). Crude Pottery including bricks is manu factured in almost every city and village. The kumhar is a village *kamin* menial. He gets his raw material from the waste land round about the village but in some cases he proceeds to a locality having a better quality of clay. If good clay cannot at all be found at hand he mixes the poor clay with sand and other materials like salt and saltpetre to introduce certain good qualities. In some localities the clay is very good and does not require the use of other ingredients to make it fit for pottery. Pasrur (District Sialkot) has had a reputation for turning out very good *handis*. A tradition says that when the customer went to the house of the kumhar to buy, he would throw the vessel down from the roof. If the *handi* broke the kumhar had to replace it by another; if however it came uninjured to the ground the bargain was settled. This seems to point out the excellence of the ware turned out. They must have been more like the modern stoneware.

The articles turned out consist of vessels for holding and cooking food, *hukkas* and *chilams*. Some of the shapes *e. g.* the *surahi* (a goblet), are very artistic and deserve special mention.

All these shapes are thrown on the potter's wheel of which there are two varieties, the Hand-driven or the Ram Chakand; the pedal-driven or the Chak Lakri.

Brick manufacture, which is also an important branch of this industry is carried on with the help of moulds.

(*b*). A superior but unglazed ware is manufactured at Bahawalpur and at Jhajhhar, in which case it is called Kaghzi ware on account of its thinness.

Glazed ware (*Roughani Bartan*) is employed either for keeping articles or for decorating purposes. Examples of the first type are *martabans*, glazed *handis*, etc. A bluish green and a transparent salt glaze, where the brownish red of the body shows from underneath, are very popular. A red glaze is also sometimes used.

The chief centres of this kind of glazing are Gujranwala, Gujrat and Sialkot. A few more potters knowing this art are scattered about the province.

A special kind of glaze is produced at Multan. This is known as Multan Faience. Though degenerated, the artists still produce very fine stuff. This will be dealt with in a separate article.

(*d*). The earthenware toy industry though it is not so important as that of Lucknow and Agra, yet deserves notice. Toys worth hundreds of rupees are sold at every fair. They are, however, giving their place, it is to be regretted, to cheap foreign-made articles because they are less attractive.

Toys are either manufactured by hand or with the help of moulds. The better quality is manufactured by the latter process. The body is then baked and covered with china clay or kharia. Aniline colors dissolved in resin are then used for decoration. Sometimes tin foil or brassfoil is also used. A gentlemen at Ropar has specialised in this art.

A red-glazed variety has also been put on the market, but the prices are prohibitive, hence they cannot compete with foreign manufacture. A need has been recently felt to produce pottery on foreign lines. Many attempts have been made in this province however, with little success. The demand for a better kind of pottery is enormous. The acid factories alone at Lahore and Delhi consume more than 2,000 jars per annum. There is a good demand also for ink-bottles and porous diaphragns for batteries and tiles for paving.

So far as the writer knows only one factory at Delhi has been working satisfactorily in this province. One opened at Lahore, the Eurick Porcelain Works, has closed after a short but brilliant career.

We shall now give a summary of the raw materials needed for pottery.

(1) Ordinary clay (kali mitti), an inferior kind of clay is met with all over the alluvial plains of the Punjab. It serves very well for the manufacture of crude pottery and common bricks.

(2) A slightly superior kind which gives a yellowish tinge on burning is imported from Derajat.

(3) A still better kind of clay, approximating in composition to china clay is found near Delhi and at Riasi in Jammu State. A similar clay occurs near Dalhousie and Kangra. It is a fairly good kind of clay and when mixed with suitable ingredients may be used for better kind of ware. In fact. *Kuthalis* or crucibles for the use of gold smiths to stand high temparature are prepared from it.

Sand and saltpetre are the other raw materials needed for crude pottery. They are obtainble almost all over the province. An oxide of iron called garu or banni is also obtainable. This is chiefly utilised to give crude pottery a warm red color which it generally possesses.

Glass and borax are the chief materials used for glazing.

Glass is prepared by melting together sand and other ingredients in proper proportions in a suitable furnace. Borax is generally imported,

The metallic oxides used for coloring are found native. Manganese dioxide and cobalt oxide are examples, the localities where these oxides were obtainable were very well known to the ancient potter but the modern artist uses imported stuff.

The art of potting can serve very well as a home industry.

In Punjab alone no less than 2,40,000 souls earn their living by potting though the quality turned out is very poor. (THE INDUSTRIAL PUNJAB LATIFI). Imports to British India of earthenware and porcelain during the three months ending June 1920 were valued at Rs. 9,74,000, These figures help to show the enormous demand that exists in addition to the local demand for crude pottery.

I think much can be done by private enterprise, and there is a great need in this province to reorganise the potential forces and put them in working. We may not be able to prepare first elass porcelain, perhaps we shall never succeed. But I think we ought to be able to produce enough to satisfy provincial demand.

May we invite the attention of the authorities and those interested in this problem!

(*The Scientific World.*)

* The previous article appeared in the April 1921. issue of. "*Commerce & Industries.*"

PAPER-INDUSTRY.

In one of their recent Bullion Reports, Messrs. Samuel Montague & Co. almost went out of their way to draw the attention of trade to an immense potentiality of India as a producer of paper and paper-materials. They remarked: "The Indian Empire possesses an abundance of bamboos and Savannah grasses capable of being transformed into paper-pulp. An official enquiry has been made recently as to how an industry derived from this material could be developed, which would obviate the import of paper-pulp and also build up a profitable export trade with other countries. Paper plays such an important and increasing part in the world's activities that success would add considerably to the assets of the Indian Empire. *The potentialities of such a trade are so great that it might well become a significant factor in the exchange as well as in the internal prosperity of India.*" Though it seems an extravagant claim to make, an examination of the essential facts shows that the expectation is well-warranted. A lot of literature, scientific and desultory, has come into existence in connection with the capacity of India to turn out pulp and paper, but the most condensed and reliable account is found in one of the Indian Trade Enquiry Reports issued under the auspices of the Imperial Institute last July. The special Committee which investigated the question of paper-meterials, was presided over by Sir Robert Carlyle and its report together with the findings of Mr. Raitt should form the basis of a correct estimate of the possibilities of the industry in India. To aviod the crowding of the discussion with figures, we may confine our attention to the resources of India, the adaptability of her raw meterials for manufacture and the prospects of her being able to feed her home-market and exporting the surplus abroad.

Previously to the war, the world's consumption of paper was eight million tons, and the supply was met by the principal producing countries namely, the United States, Germany, the United Kingdom, Sweden, Austria and Canada. In view of India's teeming population, the consumption of paper in the country, is very small. In 1913-14 it was 83,000 tons per annum, of which only 27,000 tons were produced in India. The remainder 56,000 tons was imported. Illiteracy in India accounts for the low proportion of requirements, but it may be noted that the progressive demand of India is 5 per cent, higher every year, which is twice the rate of the world's increasing demand. The very fact that myriads of people are illiterate and therefore unconcerned with the use of paper, suggests that as the country becomes less benighted, the demand for paper will increase to an indefinite extent. The proportion of paper produced in India cannot be wholly accepted as of indigenous origin for the reason that the raw material employed by local manufacturers, is in considerable part imported. Hence apart from specious speculations about an export trade, there are exceptional opportunities for supplying internal demand,

Ia the United States, Canada, Norway and other countries, paper is mainly derived from wood-pulp which is the popular material for large scale production. The Indian Forest Department has in the last decade been specially interested in the character of the raw materials available in this coutry, and it has been found that what we have to rely upon is not the coniferous tree which flourishes in temperate regions, but the bamboo and Savannah grass. According to Mr. Raitt, Burma, Bengal and South Indian are capable of giving more than sufficient bamboo and grass to meet the whole world's requirement of pulp. The bamboo is of gregarious growth, and has a quality which is of exceptional value namely, its susceptibility to quick regeneration after crop. There is no immediate danger of wood-pulp running short of manufacturing requirements in other countries, but if the demand is doubled, the depletion of trees will exceed the rate of replanting. Whereas the wood-plup tree takes forty years to develop to maturity, the renewal of the bamboo may be kept to a rotation of three years, with the advantage that the cost of transport can be maintained at a comparatively constant figure. The preparation of bamboo-pulp used to present two difficulties which have been happily solved. The first was the obstinate resistance of bamboo-nodes in the presence of digestive solutions; the other the resistance of the material to effective and economical bleaching. The supply of bamboo while definite, is improved by the crop of Savannah grass whose long-fibre pulp makes it useful for the production of superior writing and ledger paper. When attention is drawn to the unlimited resources of India, there is a qualification to be made. Certain grades of paper cannot, so far as investigation has gone, be made from local materials, and to meet them, India will have to continue buying either the finished product or suitable pulp. This margin of import resembles the dependence of India on other countries for long-staple cotton. In the case of paper, the margin of dependenc on foreign supply can be more than counter-balanced by the prospect of India being able to export large quantities of staple to other countries in the East. India does not enjoy a monopoly, in sub-tropical regions, of bamboo and Savannah grass, but the early exploitation of her resources will enable her to supply home needs and create a foreign marked. The latter possibility depends on a variety of circumstances which the Committee has done well to explore.

Taking the prospects of Western Countries including America, is there any likelihood of the foreign paper-maker requiring materials from a country like India? The question, of course, depends on the adequacy of wood-pulp in the

manufacturing countries. In United States reserves are becoming depleted. Norway has 16 million acres of which 75 per cent. is coniferous. Half of Sweden is forest of which 80 per cent. consists of coniferous trees, European Russia has large reserves. The forests of Canada lie unmeasured. Nevertheless we are told the cost of producing wood-pulp is likely to rise and therefore new sources of paper-making materials would be welcomed. As it is a proposition that hangs on contingencies, the conclusion of the Committee does not seem satisfactory. Nor have they thought of estimating the effect of the new proximity between Japan and Siberia which has limitless reserves of forest.

In the second place, the Committee proceeded to enquire if import to Britain of selected materials from India is a Commercial possibility, or whether Indian pulp can profitably compete with wood pulp, In general on pre-war standaards, it would appear that in virtue of its superior paper-making qualities, bamboo-pulp in restricted qualities should command in London a price of about £2-10 per ton above that of soda pulp; and in unlimited quantities, its superiority should enable it to compete successfully with soda wood-pulp at a price of at least £1 per ton higher than the latter. The Committee is unanimous that freight from India would be better received if sent as pulp ready for immediate bleaching. Bleaching is cheaper in Britain. The attitude of British merchants seems to be that a good trade in pulp can be developed and that if necessary, manufacturers may give up in a large degree the process of pulp-making, substituting in its place the production of paper directly from the pulp imported.

To sum up, India is very favourably circumstanced with regard to the development of the paper-industry. The replacement of imports by Indian produce would be quickly followed by a surplus production which would be available for export. Paper suited to British requirements can be made from Indian material and British traders would for the present welcome pulp in preference to raw materials and finished products. Technical difficulties in the manipulation of materials have been overcome, and there is an excellent opportunity for Indian enterprise. A word has to be added about the few Indian mills that do exist, mills which by the way have found it difficult to compete with the imported article. It is explained that the handicap was due to employment of foreign pulp and the Sabai grass, and that if new resources are tapped, the industry will have much in its favour in the home market. There are at present about nine paper mills in India. From an outsider's point of view the facts marshalled by the Committee and Mr. Raitt appear conclusive. The Indian industrialist has to examine the proposition at close quarters and ascertain the practical difficulties that escape the notice of the amateur. But it is certain that far-sighted businessmen have a clear case to investigate. For the position of affairs in respect of the paper industry at present, resembles the infant stage of the cotton and jute industries when courageous venture settled the command of the future.—(*The Hindustan Review.*)

EXCHANGE AND TRADE.

(By A. A. Twiddy.)

Before it is possible to get any accurate conception of the possibilities of future trade development in India it is necessary to review the financial conditions which have obtained in India during the past year or perhaps a little longer.

In February 1920, the Government of India published the findings of the Indian Currency Committee, which they immediately began to put into practice. In general outline the effect was to divorce the Rupee from sterling and ally it to the gold standard and the particular effect was to inflate the exchange value of the Rupee, consequent on the rise in the market value of gold, until it reached the height of 2s. 10d.—2s. 11d.

The Government of India, probably influenced by the belief that India's war time affluence—so far as exports were concerned—had come to stay, pledged itself to use all measures within its power to preserve the relation of the Rupee to gold, but unfortunately, so far as the bulk of traders were concerned, the export boom collapsed and was followed by a period of acute depression.

India's favourable balance of trade disappeared, the exchange began to slide away, and the Government, to redeem its moral pledges, began the sale of Reverse Council Bills in Calcutta, in order, partially at any rate, to restore the balance of trade, but so complete was the avalanche that although the Government continued its sales of Council Bills in Calcutta for at least six months, the sales never, even momentarily, had the effect of checking the downward movement of exchange.

These sales of Reverse Councils, which are in effect Bills of Exchange drawn in India on London, were financed by the realisation of Indian securities in London, in the shape of the gold standard reserve, and obviously there was a time limit to such operations when the home securities had been realised down to the practicable limit, and the sales of Reverse Councils had to cease. Consequently, in the absence of genuine export trade, the exchange continued its breakneck course until it reached its low-water mark in February of this year, when the rate for telegraphic transfer on London fell below 1s. 3d., as against the 2s. 10d. exactly one year previously.

This then, was the situation as far as the general balance of trade was concerned.

Meanwhile, the export trade, particularly that part represented by the Bombay Indian Merchants' Chamber, realised the falling away of exports which would follow the sudden establishment of a high exchange, and represented their view to the Government, who, however, in view of their commitments, could do nothing to ameliorate the conditions of export trade.

Generally speaking the Indian exporter saw in the pledges of the Government and in the Government's continued sales of Reverse Councils, every indication of a determination to maintain the high rate of exahange in relation to gold, and many Indian exporters entered into exchange obligations with the banks to cover their contemplated trade requirements when exports should revive.

Unfortunately for them and for Indian trade generally, the expected boom did not materialise, and they found themselves heavily involved with the banks in respect of differences due on exchange contracts consequent on the falling Rupee market.

Then followed a period of heavy retrenchments, with exporters chary of new business and banks extremely diffident as regards the negotiation of bills of exchange.

During this same period it is to be feared that many Indian importers missed their opportunity of benefiting by the brief high exchange rate.

Their failure is primarily due to neglect to cover their sales on the basis of exchange ruling at the time of sale, instead of waiting for collection.

Of course, there is the excuse that the Government had pledged itself to maintain the gold standard, which indeed it did so far as its resources permitted.

The one lesson standing out distinctly from last year's debacle is that fixity of exchange in these days of heavy fluctuations is beyond the power of any Government.

Exchange must follow the fundamental law of supply and demand. Any small difference in the balance of trade can be adjusted by the sale of Government securities but a set adverse tide cannot be stemmed without an unlimited exchequer.—(*Wigan Exam.*)

INDIAN MANUFACTURES.

That the development of manufacturing in India has made steady progress for some time past is undoubted, but it is perhaps not adequately realised on what a small scale it is still conducted bearing in mind the large area of the country and the magnitude of the population, which in 1911 exceeded 315 millions. According to an Indian Government report the industrial establishments in India employ altogether little more than $1\frac{1}{4}$ million persons, and of these more than half are working in cotton and jute mills. Iron, steel and engineering together account for about 56,000, while the total number of establishments in the country is only 4,827.

According to *The Board of Trade Journal*, one of the great difficulties in the way of development is the totally inadequate supply of efficient labour. Not only is there an absence of skill, due to lack of practical experience, but there is a great amount of irregularity in working, due to the preponderance of agriculture now and in the past. The real interest of industrial workers is still very large in their traditional occupation, with the result that factories are to a great extent deserted at harvest time. . . .

Broadly speaking, it seems to be a fair estimate that on the average about 10 per cent. of the factory workers are habitually absent, thus disarranging the best schemes for regular and systematic output.

It seems to follow from all this that India will still long remain an important market for British industries and that the chief competition to be feared is rather American and Japanese than native. Even as regards cotton goods, the production of which forms the most important Indian industry, the output is chiefly confined to inferior descriptions. This condition of affairs is not unimportant in connection with the recent raising of the import duties, which hardly seems likely to stimulate internal production to any marked degree. *"Financier"*

PANDIT MALAVIYA'S SPEECH.

Are We Monkeys?

Pandit Madan Mohan Malaviya delivered a public address at the Excelsior Theatre, Bombay, on the Industrial Regeneration of India, Mr. Laljee Naranji, Chairman of the Indian Merchants Chamber, presiding.

India, A Milch Cow.

The condition of India, the Pandit said, has been like a milched cow that is being strained to her utmost by the European manufacturers. In this saddening state of affairs, it was a matter of great satisfaction to him that the Mill industry in India was giving good account of itself and doing profitable work. He said at the outset that goods worth Rs. 553 crores were exported and imported in India. But all this shipping and transport of goods was done by a foreign agency *viz*:—by English, French, German, American or Japanese mercantile marine steamers. * * *

Need For Self Help.

A few days ago he (the speaker) was talking with an English official of long standing and he told him (the speaker) point blank that "My own country's interests first, your country's interests are secondary." And what he said was true. The fact was that we were too docile and tractable. We did not like to displease Englishmen. Even in matters of dress they are to be the arbiters as to what we should put and what we should not. We were not looking to our country's interests first as the English friend did about his country's interest.

Our people, on the other hand had adopted the monkey's attitude. If a monkey were to rob us of a precious thing and if we threw an artificial thing on him, he will throw back the precious thing and pick up the artificial one. (Laughter.) Our ladies were now in the habit of putting on false pearls, diadems and glittering trinkets imported from Europe and in return like the monkey they were throwing away their most precious gold. (Laughter). * * *

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"COMMERCE & INDUSTRIES"

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FACTORIES IN MADRAS.

The Report on the working of the Indian Factories Act 1911 for the year 1920 submitted to the Goverment by the Chief Inspector of Factories, Madras, shows that there were 483 factories at the commencement and 511 factories at the close of the year. Of these, 332 were perennial and 179 were seasonal factories. 19 of the perennial and 155 of the seasonal were connected with the cotton industry. 14 factories were not worked throughout the year and 497 were in commission as against 460 during 1919. The average daily number of operatives was 101,655 against 98,102 in the previous year. Of the 101,655 operatives, 7177 were employed in Government and Local Fund Factories and the reminder in private factories. 26,490 were employed in Cotton Spinning and Weaving Mills; 2514 were employed in Jute Spinning and Weaving Mills. 5548 certificates were issued during the year against 6122 in the previous year. The Inspector reports the certification of children on the whole satisfactory.

The health of the operatives in all the factories was generally good and close attention was paid to the sanitation of factories. Factory managements are realising the desirability and the benefit of providing house accommodation to their employees. Schools were established at 16 factories for the education of the children of the operatives. Sufficient supply of drinking water was maintained in all the factories and the wages paid to labourers during the year were much higher than those paid in the previous year, the increase being due to the increased cost of living. No difficulty existed in obtaining adequate supply of labour for industries. During the year 62 strikes occurred owing to inadequate wages and questions in connection with grain and overtime allowances. Of the 62 strikes, 350 ccurred in factories in the Madras City.

The Factories Department was transferred from the direct control of the Board of Revenue to the Commissioner of Labour with effect from 23rd February 1920.

SPINNING AND WEAVING.

According to the Returns compiled by the Department of Statistics, India, for the month of July 1921, the total quantity of yarn spun during the month under review amounted to 60 million lbs. and that of woven goods to nearly 30 million lbs. as compared with 56 millions and 34 millions of lbs. respectively in the corresponding month of the previous year, recording an increase of 7·4 per cent in the case of yarn and a decrease of 11 per cent in the case of woven goods.

In the eleven months, September 1920 to July 1921 the quantity of yarm spun amounted to 621 million lbs and that of woven goods to 351 million lbs as compared with 561 million and 338 million lbs. in the corresponding months of the previous year, or an increase of 10·7 and 3·8 per cent respectively.

In the four months April to July 1921, the quantities produced were 229 million lbs of yarn and 135 million lbs. of woven goods. There was an increase in both yarn and woven goods as compared with the corresponding period of the preceding year.

The exports of Indian yarn by sea from British India to foreign countries during the 4 months April to July 1921 were 33 million lbs as compared with 34 million and 45 milllon lbs in the corresponding period of 1920 and 1919 respectively.

The quantity of course, medium and fine yarns produced in Indian mills and that imported into India duriug July 1921 amounted to 60,336,000 lbs. and 3,219,000 lbs. respectively against 56,253,000 lbs. and 4,205,000 lbs respectively.

The value of goods woven in Indian Mills, as far as reported, was Rs. 4·46 lakhs in July 1921 and Rs. 20·35 lakhs in the 4 months Aprial to July 1921 as compared with Rs. 5·89 lakhs and Rs. 20·91 lakhs respectively in the corresponding periods of 1920. The value of cotton goods imported from foreign countries in July 1921 was Rs. 3·10 lakhs and that in the 4 months April to July 1921, Rs. 13,67 lakhs as compared with Rs. 8·99 lakhs and Rs. 32·70 lakhs respectively in the corresponding periods of 1920. The excise duty realised on woven goods in July 1921 amounted to about Rs. 26 lakhs and in the four months April to July 1921, Rs. 90 lakhs as compared with Rs. 24 lakhs and Rs. 1·16 lakhs respectively in the corresponding periods of 1920.

JOINT STOCK COMPAINES.

During the month of August 1921, there were 84 compaines registered with an aggregate authorised capital of Rs. 4·49 lakhs, as compared with 105 companies with an aggregate capital of Rs. 10·88 lakhs in the corresponding month of the previous year; and 54 companies and, Rs. 2·67 lakhs in the preceding month. Bengal accounted for 39 companies with an authorised capital of Rs. 59 lakhs, Bombay for 6 companies with Rs. 2·27 lakhs, and the United Provinces for 5 companies with Rs. 53 lakhs. The largest flotations in August were those of the Petit Investment Co., the Petit Financing Co., the Petit Industrials, and the Petit Trading Co., Bombay, and the Dehra Dun Mussorie Electric Tramway Co., United Provinces, each with an authorised capital of Rs. 50 lakhs.

NEW FLOTATIONS.

The Shoranur Co. Ltd.

One of the recent issues in the Madras Presidency is the Shoranur Co. Ltd., Shoranur, S. Malabar, with an authorised capital of Rs. 20,00,000 dividend into 20,000 ordinary shares of Rs. 100 each of which Rs. 7,50,000 in 6,000 ordinary shares is issued, payable Rs. 10 on application and Rs. 10 on allotment. The company has commenced its business, held its statutory meeting and made the first call of Rs. 20 per share. This company has on its Board 9 rich and very influential businessmen of Malabar. This company has taken over the well-known Shoranur Tile Works from A. K. T. K. M. Mana of Desamangalam situated quite close to the Shoranur Railway Junction. The Tile Works are ideally situated as regards fecilities for dispatch of tiles by rail and for shipment via Cochin to foreign countries by Shoranur Cochin Railway. For the manufacture of tiles, plentiful supply of clay is ready at hand, cheap labour is available at the site and large quantities of firewood can be obtained from the surrounding forests at a moderate price. The products of the Shoranur Tile Works have already made a name for quality and have been awarded several medals and prizes at various Industrial Exhibitions.

Automobile Transport Ltd.

This company was formed with a capital of Rs. 5,00,000 divided into 50,000 shares of Rs. 10 each payable Rs. 1 per share with application, Rs. 1—8—0 on allotment and the balance in 3 calls. A certificate fee of Rs. 1 per application money. The Managing Agents are Mesers Niyoji and Roy Ltd. and the registered office is at 285/10, Bowbazar Street, Calcutta. The object of the company is to run Motor vehicles for the transport of goods and passengers at Calcutta and in the suburbs. The company has a Strong Board of Directors and hopes to declare good dividends to the shareholders.

The Kishna Sugar Works Ltd.

The company has been formed at Masulipatam with a capital of Rs. 5,00,000 divided into 10,000 Shares of Rs. 50 each payable Rs. 10 on application, Rs. 15 on allotment and the balance in 2 calls. The object of the company is to start Sugar works at Masulipatam Fort for the manufacture of Sugar from palmyra and other jaggeries. There is unlimited scope for the development of Sugar industry in this country as the demand for Sugar is always on the increase. There is plenty of raw material available in the neighbourhood. The place of the proposed factory is a seaport connected by canal and railway with the Bezwada Railway Junction and commands all the facilities for the manufacture of Sugar. The company in due time intends to open a Distillery for preparing industrial alchohol and country spirits from molasses.

The Samalkot Rice Mills and Cotton Press, Co. Ltd., Samalkot.

This Company has been registered with a capital of Rs. 10 lakhs divided into 10,000 shares of Rs. 100 each and has arranged for the purchase from the Rani of Polavaram the Samalkota Rice Mills at Samalkot Junction and the ginning factory at Cocanada for Rs. 3 lakhs. The mill is the largest on the Coromandel coast and best equipped and electrified on an area of 6 acres of land and situated in the deltaic paddy area of the Godavari District. The directors propose to attach to this mill an oil factory as all kinds of oil seeds are available in plenty.

STANDARDIZATION IN FOREIGN TRADE.

It has been rightly said that competition is the life of trade. The movement for industrial standardization aiming at a greater degree of uniformity in merchandise is the most hopeful sign of the times and is already manifested on the horizon of international commerce. The ideal of standardization was in fact the logical outcome of the great war. It was born of wartime necessity in conserving and concentrating manufacturing and productive resources in the countries organised for war and was also due to the need for interchange of military supplies and equipment used by the allied forces operating on the battlefield. The progress of the American industries such as the automobile and its accessories and the photographic plates or film is a standing demonstration of the possibilities of standardization backed up by the support give by organisations such as the U. S. Department of Commerce and the Chamber of Commerce of the United States. Among other nations, Japan has brought about the standardization of Japanese goods manufactured for export. The Department of Agriculture and Commerce of Japan has issued orders bringing about Standardization of matches, glassware, enameled ware, braid and hosiery.

The requirements imposed by the Government of Japan in insisting upon uniformity in wares for export have increased the artistic standards of merchandise. In Holland, as the outgrowth of the wartime project, the Central Standardization Bureau formed under the auspices of the Society for the Promotion of Industry and the Royal Institute of Engineers was formed at Delft for the purpose of facilitating the Standardization of units, names and machine parts accessories etc in the industries of the Netherlands and for bringing these into conformity with Standards adopted in other countries. "The American Engineering Council, appointed by Herbert Hoover," says W. Fawcett in the *Pacific Ports*, "has reached the conclusion that lack of Standardization of building materials is one cause of the housing shortage which is pinching a number of countries."

MANUFACTURING INDUSTRY IN INDIA.

Recent Developments and Present Situation.

So much has been written recently regarding the development of Indian industries, and so considerable is political importance now attaching to it, that some statistics illustrating its place in the economic life of the country (bearing in mind the limitations to the comparative use of the figures mentioned below) will be found useful. In absolute numbers, manufacturing industry in India employs more people than in any other British Dominion (excluding of course, the United Kingdom). A Return published in March, 1920, shows that in 1917 the average number of people employed in such industries was 1,238,410, as compared with 328,049 in Australia in 1918, 134,211 in South Africa during 1917-18, and 674,910 in Canada in 1917. When, however, comparison is made of the proportions which these figures bear to the total number of the population, India is the least industrialised of all the great Dominions, having on the average less than 0·4 per cent, of its total population employed in such industries as compared with 2·24 in South Africa, 6·5 in Australia, 9·25 in Canada, and 15·2 in the United Kingdom.

In all these figures there is some difficulty in making comparison as the statistics showing people employed are generally based on returns for the years 1917 or 1918, whereas the statistics of population are those given in the Census of 1911. As, however, very considerable changes in the numbers of the population would be necessary to affect materially the relation of the percentages shown the disadvantage arising from this is not serious.

A much more serious disadvantage is that the definition of factory or industrial establishment on which the various returns are based differ considerably for each dominion, the returns for India, for instance, being based on the larger industrial establishments only, where as those for South Africa include a large number of very small workshops. Had the South African and Indian Statistics been on the same basis it might have shown that the proportions of the population in these two territories engaged in manufacturing industry were approximately equal; it could hardly be expected that it could show a position more favourable to India than that.

Problems.

One of the great difficulties which the organisers of Indian industry have to face is the efficient staffing of their establishments from a people who have been reared under traditions belonging to a very different way of life. Native Indian labour is predominantly agricultural and does not take kindly to an industrial system, to which it is only attracted by the higher rates of wages which can be obtained. The native, accustomed to a low standard of life, is not easily induced to undergo the exertions which are necessary to raise that standard to a higher level.

The most serious difficulty with industrial labour is that it is intermittent; the worker in many instances only works at the factory in order to save sufficient money for some family festival, or to tide over a bad farming season, or else to free himself from the clutches of the moneylender. He frequently returns to his village at the harvest time and also when he has saved sufficient money to take a little holiday. Competent observers state that 10 per cent. is a very low estimate of the number of absentees at any one time in any factory or industry, and during harvest seasons staffs are sometimes reduced by as much as one-third.

Combined with the native worker's general lack of skill there is the curse of the moneylender. It has been estimated, for instance, that more than 80 per cent of the operatives of the Bombay Cotton Mills are heavily in debt to moneylenders, who charge iniquitous rates of interest. It is widely held that these exactions keep the working standard of living very low, and react on his efficiency. With a view to improving the position of the worker, many of the larger works have initiated educational and training schemes, housing schemes, and improvements in the conditions in the mills and factories.

Apart from the irregularity of the labour supply, the prejudice arising out of the caste system occasions difficulties where it is necessary for large numbers of people to work together in one factory. The Indian does not take readily to the co-operation and combination essential to modern industrial production. Caste restrictions, however, are being modified, and in other ways adjustment to the needs of the time is being made. Nevertheless the difficulties are still so pronounced that it is very doubtful if native labour can produce goods more cheaply than the more highly paid European workers, and in this connection it should be remembered that establishment and other overhead charges are not substantially lower for Indian as compared with the British industry. Further, the cost of supervision in India, which must be undertaken by skilled men, is considerably higher than it is in a European country or in the United States of America. These difficulties, however, may not be permanent; they appear to belong to a period of transition.

Effects of the War.

During the war the necessity of mobilising the whole resources of the Empire for military purposes provided a great stimulus to Indian industry. The Indian Government, mainly through the Munitions Board formed in April 1917 assisted these developments. The primary object of the Board was to furnish supplies to the Eastern theatres of war, and in view of this fact the Imperial Government agreed to defray more than two-thirds of the entire costs of the organisation. The Board followed a twofold policy.

(1) It sought to stimulate the production of all kinds of material;

(2) It sought to limit the demands of India on the resources of the United Kingdom by referring orders wherever possible to Indian manufacturers.

These objects it pursued by making as many of its own purchases direct from Indian producers as possible, by controlling the Indian demand for goods imported from the United Kingdom, by assisting individuals and firms to import plant and to engage chemical and technical experts and skilled labour in order to establish new industries or develop old ones, by dissemination of information and expert advice to persons prepared to establish new industries in India.

The control of home demand was the most powerful weapon in the hands of the board. All demands from Government departments, railways, and private firms in India for controlled articles were obliged to pass through the board, and obtains its recommendations for the grant of licences to import. Such recommendations were made by the officials of the board only when it was impossible to purchase the articles or suitable substitutes locally or to arrange for their manufacture within a reasonable period. In cases where the article could not be made in India, intending buyers were usually urged to obtain the goods required in the United States or Japan.

The development of native Indian industry received a further stimulus on the report from the Indian Industrial Commission published in the autumn of 1918, in which it was urged that in future the Government must play an active part in the industrial development of the country.

Engineering and Textile Products.

The difficulty which was experienced during 1919 and a considerable part of 1920 in obtaining supplies from the United Kingdom helped further to stimulate the growth of Indian native industries. This point can be fairly appreciated from the satistics of imports. In the year 1913-14 India imported over Rs. 7,75,83,093 worth of machinery. Of this amount 90 per cent. came from the United Kingdom. In the year 1918—19 the value of imported machinery was only Rs. 5,00,33,959, and of this decreased trade the United Kingdom had only 66 per cent., as compared with the 90 per cent. held in 1913. For the year 1919-20 the total imports of machinery amounted to Rs. 9,01,81,849, of which 65·6 per cent, was received from the United Kingdom. It is not surprising in these circumstances that the year 1919 witnessed a considerable amount of speculation in new Indian industries and the prevalence of an optimistic tone regarding their future.

The commercial boom of 1919 and the early part of 1920, and the succeeding depression have both had their material reactions on Indian industry, but there is no evidence of any great "mushroom" growth during the earlier period, or rapid decay during the succeeding depression. The position in regard to cotton and iron and steel may be taken as fairly typical of the whole of Indian manufacturing industry.—(*Journal of Commerce.*)

FINANCE AND RAILWAYS.

The following *Communique*, has been issued from Simla :—

"In a *Communique*, dated the 21st May, 1921, the appointment was announced of two committees at Calcutta and Bombay, respectively, to advise Government generally on the question of the renabilitation of Government securities and in particular how best to give effect to the following resolution which was passed by the Council of State on February 23rd, 1921: This Council recommends to the Governor in Council that the financial policy of the Government be so directed as to ensure the early rehabilitation of Government securities with due regard to tbe necessity of funding the temporary debt and to the provision or capital expenditure for productive purposes. The reports of these two Committees have now been received and are published herewith for general information. Both the committees are opposed to any concession (such as the raising of the rate of interest) which would benefit the holders of these securities at the expense of the general tax-payer. Though the Calcutta Committee has made a minor suggestion to the effect that the rate of income tax thereon be standardized, the Calcutta Committee's main recommendation is that a terminable loan with a long currency and carrying interest at 5 per cent. free of income tax (issued if necessary at a discount) should form tho base loan for Government's future borrowing programme and that holders of 3½ and 4 per cent securities should be allowed to convert their holdings into the new loan on payment of a cash subscription, the actual terms being left for settlement at the time the conversion is offered having regard to the market quotations of the times."

"The main recommendation of the Bombay Committee is that Government should publicly announce that it would pay off the 3½ per cent. loans between the 45th and 50th year from now and that it should undertake to purchase by public tender and to cancel each year 2 per cent. of the amount of such securities or outstanding at the beginning of the year. Such purchases to be effected during the course of the loan operations of the year. The recommendations are thus closely bound up with the whole question of Government's future borrowing operations which is a matter won under the Government of India's consideration."

"The actual policy to be followed during the course of, say, the next ten years must depend mainly upon the volume of borrowing which will be necessary having regard both to the maturing liabilities and to the amount of money which may have to be provided from the loan funds for capital expenditure on railways and irrigation and on the various objects of development in which the Provincial Governments are more particularly concerned. The former liabilities are known up to and including the financial year

1931-32. The total amount of maturing rupee debt is roughly 116 crores. Apart from the Treasury Bills held by the public the amount of which at the commencement of the present financial year was 43¾ crores, the extent of the liabilities arising from the new capital expenditure depends upon the policy which the Imperial and Provincial Legislatures may respectively decide to endorse. As regards capital outlay upon railways and other objects the Provincial Governments have already been asked to lay before their legislatures for approval, any capital projcets which they propcse should be financed from loan funds in the near future."

"As regards railways, it is understood that the report of the Railway Committee, a summary of which has been published, contains recommendations as to the amount of capital expenditure which should be annually devoted to railway purposes. It may be found desirable after the publication in India of the full report to obtain the approval of the Legislative Assembly to a definite programme of railway expenditure, during a certain period of years. For the above reasons the Government of India are not yet in a position to state the precise action that thay propose to take in the light of the recommendations of these two committees. Those recommendations will, however, be carefully considered and a decision arrived at thereon as soon as the future liabilities in the matter of new capital expendture have become sufficiently determind to enable the Government to decide upon its borrowing policy for the future. The Government of India have expressed to the chairman and members of tne two committees their appreciation of their work and their thanks for the time and labour expended in considering the problem before them and in formulating their recommendations."

THE PAINT INDUSTRY: A BUSINESS PROPOSITION.

In an interesting article in the June issue of *Indian Business*, Mr. Geo. O. Forrester, L. Ph., discusses the possibilities and prospects of the paint industry in India. Himself the head of one of the oldest paint concerns of this country Mr. Forrester places before the industrial and commercial public a proposition "which has all the elements of successful business in it." He points out the properties and value of certain earth colours; where they are found, and for what purpose they are used—information essentially necessary to exploit the potential wealth of India in respect of her natural pigments. Like many other industries, the paint industry is one of recent growth; but it has come to meet a definite demand of modern civilisation. Paints are used generally for three purposes—protective, decorative and artistic; but their greatest utility in India consists in their use as covering or coating agents upon metallic and timber structures and surfaces so as to enable them to withstand the ravages of time and weather and in the case of timber of destructive insects. Think of the countless factories, bridges, railway wagons, and carriages, buildings, barracks, and other wooden and metallic structures in the country, all of which stand in imperative need of protective paints. The demand for decorative paints is not so insistent; nor is there the least chance in the immediate future of any appreciable demand for Indian-made colours for artistic purposes. The writer, therefore, concentrates his attention upon protective paints for which the requisite bases exist in a natural state in India.

Unwarranted Imports.

Imports are a sure index of demand; and the fact that the annual imports of protective paints exceed a crore and a quarter of rupees in value proves the existence of an important market in India. Mr. Forrester furnishes the following statistics from Mr. Brodie's brochure on paints: 1914, £607,686; 1915, £552,832; 1916, 584,671; 1917, £794,916; 1918, £662,896 and 1919, £845,772—an eloquent testimony of the steady demand for protective paints which is sure to exceed a miliion sterling within the next two or three years. "Here, then, is the proposition," writes Mr. Forrester, "for the consideration of industrialists in India, European or Indian. Through sheer lack of enterprise in a perfectly safe sphere of business the country has to pay out over a crore of rupees, perhaps very soon double that amount, for the purchase of articles, most of which she can, with scientific aid, manufacture herself, inasmuch as she more or less abounds in the raw materials—basic, subsidiary and ingrediential, necessary for their manufacture. The irony of this will be more in relief when it is stated that even linseed oil—a highly useful medium for making paints ready for application—is imported in spite of the fact that India is herself one of the greatest linseed producing countries in the world!" Indeed, with the vast natural resources within her own borders, India should not only manufacture paints to meet her internal demands, but should also be able to foster an export trade in them.

White Lead Industry.

Turning to the subject of manufacture Mr. Forrester declares himself against the modern practice of specialisation. While certain manufacturing firms confine their attention to the preparation of pigment, others occupy themselves with its transformation into paste-paint; others again are engaged in producing a single pigment or one particular class of pigments. The manufacture of white lead is an industry itself and there are firms that are concerned with various oxide of iron pigments. Mr. Forrester, however, holds that for a paint factory to be successful in India specialisation must be rigidly avoided: He advocates the exploitation of as many departments of the industry as possible, so as to make it self-contained and self-sufficient. A manufacturer in India should, according to the writer, mine his own pigments; grind and mix them himself and himself prepare the vehicle and ingredients necessary, such as the extraction of oil, the preparation of lac and the manufacture of varnish. Mr. Forrester's idea is that unless the price of the Indian commodity is cheaper than the foreign product there can be no successful competitive campaign in foreign markets; and the only way to gain the end in view is to undertake all essentially allied industries all at once. The process is sure to be economical as India is one of the greatest lac and linseed producing countries. The paint industry is thus one of the best business propositions in India at the present day; and, as Mr. Forrester aptly puts it, it awaits the magic touch of science, capital and enterprise combined. We hope we shall, ere long, come across more paint propositions among future new industrial efforts, similar—may we say?—to the successful and profitable undertakings that already exist. We await with interest on this score the result of the flotation of the Murarka projects, with a capital of five lakhs of rupees. —*Commerce*.

(*Continued from P. 103.*)

Swadeshi A Right Move.

He then referred to Mr. Gandhi's propaganda of Swadeshi as most opportune and God sent. He said he had been a staunch Swadeshi to himself for the last 40 years and rarely had he used foreign cloth. It was most gratifying that the Swadeshi movement was taken up by all as a national movement. There was certain sacredness in hand woven cloth which was not in machine made clothes however beautiful they may be. Sacred because it was woven by the hands of women; sacred because it was woven by the hands of men after their daily prayer. Besides the home industry of Charkha would give physical exercise to men and women and keep them off from the temptation of going to cinemas and theatres. The time had come when they must make up their minds to use only Swadeshi cloth and bid good-bye once and for all to foreign cloth.

Among the articles likely to be developed in India he said we had 45,000 miles of rails. India had vast stores of iron ore, coal and hardware. There was a possiblity of still extending railways and India could supply rails made in India. Then there were umbrellas used by all alike, bicycles and motor cars for which they were charged by thousands instead of huudreds which was the cost price. Then watches which are used by rich and poor, and many other sundry articels India could produce but the pity of the situation was that whereas Japan was turning out every day 2,000 watches, the city which prides itself by the description of Urbus "Prima in Indis" and "The Gateway of India," (Bombay) had not a factory to turn out 100 watches per day.

He then referred to the Kolar Gold Mines and the Jharia Coal Mines which were giving enormous profits to Europeans and still there were many mines with possibilities of development to India's advantage. But to gain all this we require the spirit of enterprise. * * * *—
(*Bombay Chronicle.*)

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